

April 4, 1933.

H. B. HASKINS ET AL

1,903,365

COMBINATION DOVETAIL AND DOOR BUMPER

Filed July 8, 1931

2 Sheets-Sheet 1

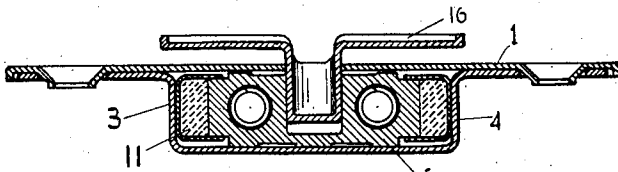
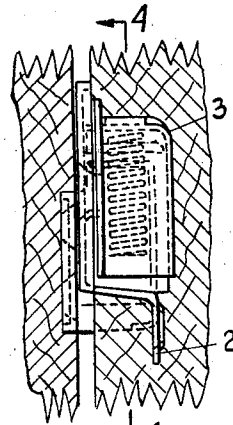
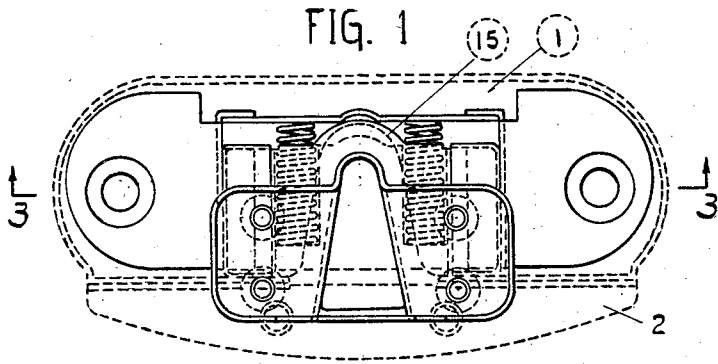


FIG. 2

FIG. 3

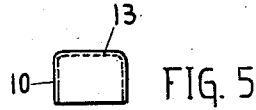
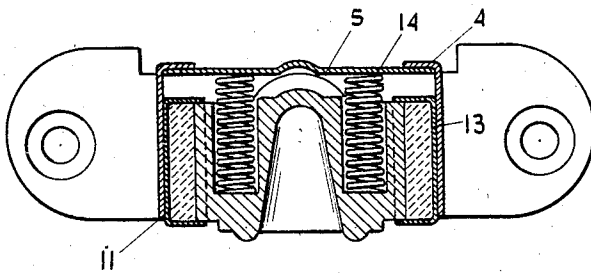


FIG. 4

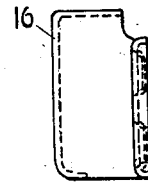
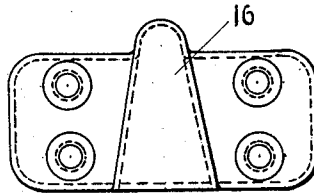
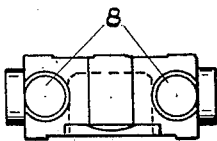


FIG. 7

FIG. 10

FIG. 11

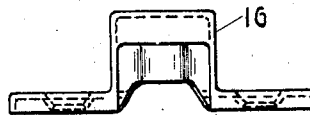
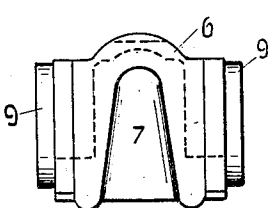


FIG. 8

FIG. 9

FIG. 12

INVENTOR.  
 HOWARD B. HASKINS  
 BY EMORY GLENN SIMPSON  
*Carnes & Kivelle*  
 ATTORNEY.

April 4, 1933.

H. B. HASKINS ET AL

1,903,365

COMBINATION DOVETAIL AND DOOR BUMPER

Filed July 8, 1931

2 Sheets-Sheet 2

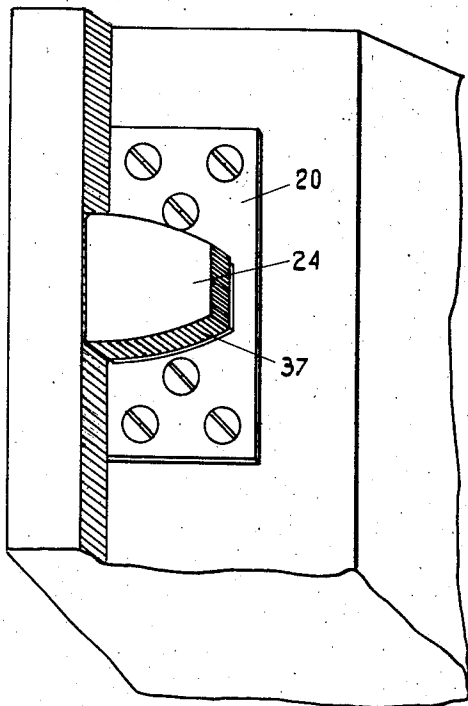


FIG. 13

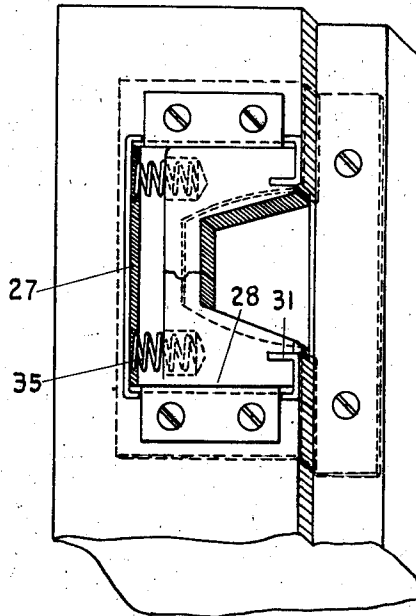


FIG. 14

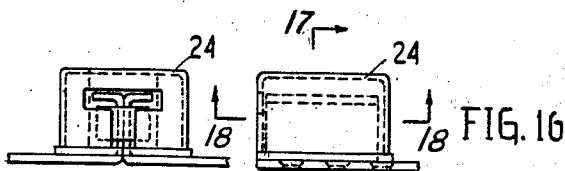


FIG. 15

FIG. 16

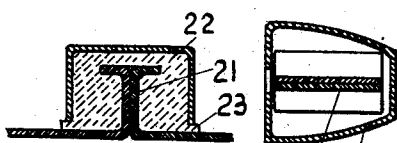


FIG. 17

FIG. 18

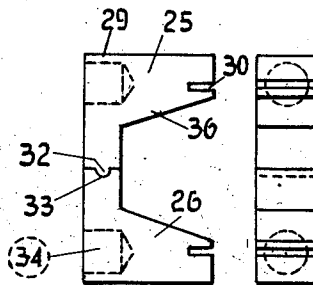


FIG. 19

FIG. 20



FIG. 21

INVENTOR.

HOWARD B. HASKINS.

BY EMORY GLENN SIMPSON.

*Barnes Kinselle*

ATTORNEY.

# UNITED STATES PATENT OFFICE

HOWARD E. HASKINS, OF HIGHLAND PARK, AND EMORY GLENN SIMPSON, OF DETROIT, MICHIGAN, ASSIGNORS TO TERNSTEDT MANUFACTURING COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN

## COMBINATION DOVETAIL AND DOOR BUMPER

Application filed July 8, 1931. Serial No. 549,448.

This invention relates to a combination dovetail and door bumper. It has been proposed heretofore to combine the bumper and the registering device in a single unit so that when the door is swung into closed position it will be properly aligned in the door opening and when the latch is released, it will be thrown open. This proposed arrangement works on the theory that it is desirable to hold the door rigidly against up and down vibration. The difficulty with this proposed type of combination dovetail and bumper is that holding the door rigidly against up and down vibration transfers the stress to the hinges which accelerates the wear of the hinge pins and consequently rattles soon result.

It is an object of this invention to overcome this difficulty and yet achieve the desirable functions of properly aligning the door in the door opening and of throwing the door open when the latch has been released, and at the same time not transfer excessive stresses set up by the body weave to the hinge pintles. This has been achieved by permitting a cushioned up and down vibration of the door.

It is a further object of this invention to produce a combination dovetail and bumper which will properly register the door in the door opening and throw the same open upon the release of the latch and which at the same time will cushion up and down vibration of the door in the door opening.

It is an object of this invention to produce a combination dovetail and bumper having wedge and socket members which permit and yieldably resist relative movement between the door and the door opening in a plane normal to that of the door.

It is an object of this invention to produce a combination dovetail and bumper having a spring loaded socket member movable inwardly and outwardly which is resiliently cushioned for up and down movement and in which the resilient cushions are so mounted that they are not subjected to sliding displacement.

It is an object of this invention to produce a combination dovetail and bumper in which the socket member is yieldably movable in-

wardly and outwardly and upwardly and downwardly and in which the yieldable means for permitting upward and downward movement of the socket are arranged to move inwardly and outwardly with the socket member.

In the drawings:

Fig. 1 is a plan view of a combination dovetail and bumper.

Fig. 2 is a side elevation of the same.

Fig. 3 is a section along the line 3—3 of Fig. 1.

Fig. 4 is a section along the line 4—4 of Fig. 2.

Figs. 5 and 6 are detailed views of the housing for the rubber block.

Figs. 7, 8, and 9 are detailed views of the socket member.

Figs. 10, 11, and 12 are detailed views of the wedge member.

Fig. 13 is a perspective showing a modified form of wedge member.

Fig. 14 is a perspective of modified form of socket member.

Figs. 15 and 16 are rear and side elevations respectively of the modified form of wedge member.

Figs. 17 and 18 are sections along the line 17 and 18 of Fig. 15 respectively.

Figs. 19, 20, and 21 are detailed views of the modified socket member.

Referring more particularly to the drawings the combination dovetail and bumper comprises an outer cover plate 1 having an L shaped flange 2 which is adapted to be secured either to the body or door pillar. The cover plate has riveted or otherwise secured thereto the socket housing 3. The housing 3 comprises the side walls 4, the rear wall 5 and the bottom 6. The front of the housing 3 is closed by the L shaped flange 2 of the cover plate. The socket member 6 is shown in detail (Figs. 7, 8, and 9) and in this instance is a die-casting. The socket member 6 is provided with a wedge shaped socket 7 and a pair of spring receiving openings 8, one on each side of the socket 7. The socket member 6 is likewise provided on each side with a pair of reduced projections 9 each of which is

adapted to slidably engage the inside of a cup 10.

Since the socket member 6 is adapted to be received by the housing 3 and permit upward and downward movement as well as transverse movement of the door in the door opening, to this end the cups 10 each have mounted therein any suitable resilient material such as the blocks of rubber 11. After each cup 10 is provided with the rubber block 11, the open end of the cup is slipped over a reduced projection 9 and then the socket member 6 and associated rubber blocks and cups 10 are placed within the housing 3 with the bottoms 13 of the cups 10 in sliding engagement with the side walls 4 of the housing 3. Since the projections 9 slidably engage the inside of the cups 10, therefore the socket 6 is free to move upwardly and downwardly relative to the body pillar or right and left as viewed in Fig. 3 within the housing 3 and will be resiliently supported by the blocks 11. It will be noted that the mounting of the blocks 11 within the shoes 10 and in turn slidably mounting the shoes 10 over the projections 9 of the socket permits the blocks of rubber 11 to travel in and out with the socket and thus only be compressed rather than stretched and twisted because the sliding frictional contact is between the bottom 13 of the shoes 10 and the side walls 4 of the housing 3 rather than between the rubber and the socket member or the casing 3.

Suitable coil springs 14 are positioned in the openings 8 and are backed up by the rear wall 5 of the housing 3.

As shown in Figure 1, the cover plate 1 is provided with a suitable opening 15 which permits the engagement of the wedge member 16 in the socket 7. The sides of the socket 7 and of the wedge member 16 are correspondingly formed so that the wedge will not stick in the socket 7. As is the usual practice, the wedge member 16 is mounted upon the door pillar and the socket member is mounted upon the body pillar or these positions can be reversed.

In operation it is evident that when the door is swung to closed position the wedge 16 will engage in the socket 7 and the flaring sides of the wedge will cooperate with the corresponding sides of the socket to properly align the door in the door opening. At the same time the socket member 6 will be pushed inwardly and the springs 14 compressed. So long as the door is latched the door will be permitted to move upwardly and downwardly in the door opening and be resiliently cushioned by the rubber blocks 11 since the reduced projections 9 of the socket member 6 move inwardly and outwardly in the cups 10. At the same time inward and outward movement of the socket 7 and associated rubber blocks in the casing 3 is permitted by virtue of the sliding frictional contact be-

tween the bases 13 of the cups and the side walls 4 of the socket casing. Whenever the latch bolt is released, the loaded coil springs 14 immediately expand to thrust the door outwardly. Since, as stated above, the flare of the sides of the socket 7 and the wedge 16 is such that the wedge will not stick in the socket 7, it is evident that the socket 6 is free to move in and out and up and down in the housing 3 which gives the same a universal movement in a plane normal to the door when the same is in closed position. This universal movement is always yieldably cushioned by either or both the coil springs 14 and the rubber blocks 11 and hence permits the vehicle body to weave without throwing undue strains and stresses upon the door hinges. At the same time it will be noted the rubber blocks 11 perform their cushioning function free from sliding frictional engagement with the housing 3 or the socket 6. Preferably the rubber blocks 11 are loaded when in assembled position within the housing 3. It will be noted that the socket is self-aligning within normal requirements. If the wedge and socket do not seat perfectly due to variations in installations the socket will twist edgewise against the rubber blocks and the springs, and thus effect a perfect seat between the wedge and the socket. A small commercial clearance is allowed between the projections 9 of the socket and the cups 10 to prevent binding when the socket member is slightly cocked to effect a perfect seat between the socket and the wedge.

In the modified form of the combined dovetail and bumper the wedge member comprises a mounting plate 20 provided with the upstanding lug 21. A block of rubber 22 is molded so that it may be assembled about the upstanding lug 21. This block of rubber has a peripheral flange 23. A hollow wedge member 24 is then pressed over the rubber block 22 so that the rubber is loaded and with its lower edge cushioned by the rubber flange 23.

The socket member comprises the two shoe members 25 and 26 which can be made of any suitable material, such as bakelite. These shoe members are adapted to be received within the socket housing 27. The socket housing 27 is provided with the end walls 28 which have a sliding engagement with the sides 29 of the shoes 25 and 26. Each shoe 25 and 26 is provided with a kerf 30 for the reception of the return bent portions 31 of the housing 27. The return bent portions 31 have a loose fit in the kerfs 30. The shoe 25 is provided with a wedge shaped projection 32 which engages in the wedge shaped recess 33 of the member 26 to provide a pivotal engagement between the two shoe members. The shoes likewise are provided with the openings 34 for the coil springs 35. The

flare of the corresponding sides 36 and 37 of the socket and wedge members respectively is such that the wedge will not stick in the socket.

5 When the door is in closed position and the wedge 24 engaged with the socket, the rubber block 22 upon which the wedge 24 is floated permits up and down movement of the door in the door opening, and the spring 10 35 permits inward and outward movement of the socket members. The socket members 25 and 26 are arranged primarily for inward and outward movement although by virtue of the loose fit of the return bent portion 31 in 15 the kerfs 30 and the pivotal connection 32 and 33 between the shoe members, a limited spreading is permitted between the two shoes. In this form of the combination dovetail and bumper, the coil spring loaded socket mem- 20 bers yieldably hold the door tightly in latched position to prevent rattling, and the rubber floated wedge member permits the relative movement between the door and the door opening, and likewise serves as a registering 25 device to properly align the door in the door opening.

It will be noted that by pivotally engaging the two socket members 25 and 26 through the wedge shaped projection 32 and recess 30 33, there is no chance for the dovetail to lock the door in disaligned relation with the door opening in case the door is closed while the door opening is temporarily out of position or distorted as is often caused by one wheel being 35 somewhat lower than the others when the car is parked. If the door is closed while the door opening is somewhat distorted, the wedge 24 will engage in the socket 36 and force the same inwardly compressing the coil springs 35 but both of the socket mem- 40 bers 25 and 26 will move inwardly together and as soon as the car is set in motion and the wheels are again placed on the same level, the wedge will attain a perfect seat in the 45 pocket and hence properly align the door in the door opening.

We claim:

1. A combined dovetail and bumper adapted for use with a vehicle door comprising 50 in combination male and female members having correspondingly formed sides, a coil spring for yieldingly cushioning in and out movement of the said female member, parallel guide surfaces for guiding the in and 55 out movement of said female member, and a rubber block for yieldingly cushioning up and down movement of the said female member whereby the said members are free to float in a plane normal to the plane of the 60 door.

2. A combined dovetail and bumper adapted for use with a vehicle door comprising in combination a mounting plate having a recess, a socket member for the said recess, a 65 pair of coil springs mounted between the back

of the recess and the said socket and a pair of rubber blocks mounted one on each side of the said socket member for cushioning upward and downward movement of the same, and a wedge member adapted to engage in the said socket. 70

3. A combined dovetail and bumper adapted for use with a vehicle door comprising in combination a mounting member having a recess, a socket member movable in the said 75 recess, resilient means for cushioning the movement of the said socket member, and carrier means for said resilient means having a sliding engagement with the said socket and a wall of the said recess for preventing 80 relative sliding movement between the said resilient means and the said socket.

4. A combined dovetail and bumper adapted for use with a vehicle door comprising in combination a recessed mounting member, a 85 socket freely movable in the said recess, resilient means between the socket member and the back wall of the said recess, a rubber block for cushioning upward and downward movement of the said socket and a metal casing 90 for carrying the said rubber block overlapping an end of the said socket and frictionally engaging a wall of the said recess, and a wedge for engaging in the said socket.

5. A combined dovetail and bumper adapted for use with a vehicle door comprising in combination a mounting member having a recess, a socket movably mounted in the said 95 recess, resilient means exerting an outward thrust on the said socket, a block of rubber for cushioning the up and down movement of the said socket in the said recess, a cup enclosing the said rubber slidably overlapping and having a telescoping engagement 100 with an end of the said socket and slidably engaging a wall of the said recess, and a wedge member adapted to engage in the said socket. 105

6. A combined dovetail and bumper adapted for use with a vehicle door comprising 110 in combination a mounting member having a recess, a socket movable in the said recess, resilient means exerting an outward thrust on the said socket and a member carrying a loaded rubber block having a telescopic engage- 115 ment with an end of the said socket and a sliding engagement with a wall of the said recess for cushioning up and down movement of the said socket and a wedge for engaging in the 120 said socket.

7. A combined dovetail and bumper adapted for use with a vehicle door comprising in combination a mounting plate having a recess, a socket member movably mounted in the said recess, a pair of coil springs positioned between the socket and the rear wall 125 of the said recess and exerting an outward thrust on the said socket, a pair of rubber blocks for cushioning upward and downward movement of the said socket, and a cup 130

shaped member enclosing each of the rubber blocks and having a sliding telescopic fit with the upper and lower ends of the socket member and slidably engaging the upper and lower walls of the recess whereby the rubber blocks are free to travel in and out with the said socket without being subjected to a frictional sliding engagement with either the socket or a wall of the said recess, and a wedge member for engaging in the said socket.

8. A combined dovetail and bumper adapted for use with a vehicle door comprising in combination a mounting member having a recess, a socket slidably mounted in the said recess and freely movable only inwardly and outwardly of the said recess, resilient means exerting an outward thrust on the said socket, and a freely floating wedge member adapted to engage in the said socket.

9. A combined dovetail and bumper adapted for use with a vehicle door comprising in combination a mounting member having a recess, a socket member mounted in the said recess and having a sliding engagement with the upper and lower walls of the said recess to prevent up and down movement of the said socket in the said recess, spring means exerting an outward thrust on the said socket, a wedge member for engaging in the said socket, and a block of rubber supporting said wedge member.

10. A combined dovetail and bumper adapted for use with a vehicle door comprising in combination a mounting member having a recess, a socket comprising a pair of shoes having a pivotal engagement, resilient means exerting an outward thrust on the said shoes and a rubber floated wedge member for engaging in the said socket.

11. A combined dovetail and bumper adapted for use with a vehicle door comprising in combination a support having a recess, a socket member comprising a pair of spring loaded pivotally connected shoes, means having a loose interfit with the said shoes for retaining the same within the said recess and permitting a limited pivotal movement between the said shoes, and a rubber floated wedge member for engaging in the said socket.

12. In a dovetail of the type having inter-engaging male and female members adapted to be mounted upon supporting surfaces of fixed and movable parts of a vehicle body and in which one of said male and female members is movable inwardly and outwardly, the combination with said inwardly and outwardly movable member of resilient means for cushioning upward and downward movement of the said member, the said resilient means being adapted to move inwardly and outwardly with the said member, and a slide member positioned between the resilient means and the supporting surfaces of the in-

wardly and outwardly moving member and adapted to move with the resilient means.

13. In a dovetail of the type having inter-engaging male and female members adapted to be mounted upon supporting surfaces of fixed and movable parts of a vehicle body and in which one of said male and female members is movable inwardly and outwardly, the combination with said inwardly and outwardly movable member of a rubber cushion for cushioning upward and downward movement of the said member, and a sliding surface for the said rubber cushion adapted to move inwardly and outwardly with the said cushion to slidably engage the supporting surface for the inwardly and outwardly movable member whereby relative sliding movement between the said member and the rubber cushion is prevented.

14. A dovetail comprising male and female members adapted for up and down and in and out movement, and to be mounted upon fixed and movable parts of a vehicle body, the said male and female members having inter-engaging faces, resilient means for cushioning the in and out movement of one of the said male and female members, and resilient means for cushioning the up and down movement of one of the said male and female members, the faces of the said female member being substantially equidistant from each other at all positions of the in and out and up and down movement of the male and female members.

15. In a dovetail of the type having inter-engaging male and female members adapted to be mounted upon fixed and movable parts of a vehicle body and in which one of said male and female members is movable inwardly and outwardly and upwardly and downwardly, the said female member having a socket of fixed size, the combination with said inwardly and outwardly movable member of resilient means for cushioning up and down movement of the said member, a supporting surface for the said movable member along which the said member is movable inwardly and outwardly, and a shoe between the supporting surface and the movable member whereby sliding contact between the resilient means and the said member and between the resilient means and the supporting surface is prevented during the inward and outward movement of the said member.

16. A dovetail comprising a mounting member having a recess with opposed parallel upper and lower walls, a socket member having a socket of fixed size for the said recess movable inwardly and outwardly and upwardly and downwardly in the said recess between the said walls, a resilient member for cushioning in and out movement of the said socket, a pair of rubber cushioning members mounted one above and the other below the said socket member for cushioning up and down movement of the said socket in the re-

cess, and a shoe for each rubber cushion, one of said shoes being mounted between the socket member and the upper wall and the other between the socket and the lower wall of the recess, each shoe being fixed relative to its rubber cushioning member whereby sliding engagement between the cushioning members and the socket and opposed upper and lower walls of the recess is prevented during the in and out movement of the socket member.

17. A dovetail for a vehicle body comprising male and female members having interengaging faces and adapted to be mounted upon fixed and movable parts of a vehicle body, one of said members being movable inwardly and outwardly, a spring for loading said inwardly and outwardly movable member and yieldably resisting inward movement of the said member, one of said members being movable upwardly and downwardly, and a rubber cushion for cushioning upward and downward movement of said member.

18. A dovetail for a vehicle body comprising male and female members having interengaging faces and adapted to be mounted upon fixed and movable parts of a vehicle body, one of said members being movable inwardly and outwardly, the faces of the said inwardly and outwardly movable member being movable inwardly and outwardly as a unit, a spring for loading said inwardly and outwardly movable member and yieldably resisting inward movement of the said member, one of said members being movable upwardly and downwardly, and a rubber block for supporting the upwardly and downwardly movable member.

In testimony whereof we affix our signatures.

HOWARD B. HASKINS.  
EMORY GLENN SIMPSON.